Seaborne Targets Users' Guide

Contents

Introduction . . . . . .

This publication provides a compilation of US Navy Seaborne Target data enabling the test community and the Fleet to select a target which most closely supports their requirements. As weapons, and their evaluation, become more complex, emphasis is placed on selecting suitable targets for weapons evaluation and Fleet training. This Users' Guide provides information on all established US Navy Targets of Record.

The Target System Points of Contact contained herein are your best singular source for operation of these targets worldwide. Actual utilization of the targets requires permission granted by the Chief of Naval Operations, Code N433. Target operations can then be scheduled through the appropriate range scheduling personnel listed here. The actual performance of any given target as cited in this Guide may be affected by Range limitations.

Comments and/or recommendations for improvement of this guide are welcome.
Please forward directly to:
Head, Surface Target Team
Naval Air Warfare Center Weapons Division
Point Mugu, California
(805) 982-2701(DSN 551)

Seaborne Target Systems fall under the purview of the Program Executive Office for Expeditionary Warfare, PMS325, the Program Manager for Boats and Craft. The PMS325 Seaborne TargetsPoint-of-Contact may be reached at (202) 781-5028.

Contents . . . . . .

NAWCWD Surface Targets Team Charter

- Develop surface targets, target systems, target control and augmentation devices.

- Operate and maintain surface targets, subsystems, target controls, and augmentation devices on the NAWCWD Sea Test Range.

- Serves as the cognizant field activity in support of PEO SHIPS (PMS325) the acquisition sponsor for seaborne targets worldwide.

- Provide seaborne target services at other ranges and operating sites as requested.

- Maintain a capability for depot level repair of seaborne targets.

- Provide the procurement/fabrication of assigned seaborne targets, modification kits, and augmentation systems.

- Coordinate efforts for reliability, quality assurance and configuration/data management in assuring compatibility and conformity for surface targets, subsystems, target control systems, and augmentation devices.

QST-35
Seaborne Target

QST-35 Description . . . . . .

The QST-35 is a multi-purpose seaborne powered target (SEPTAR) designed to provide a remotely controlled target, which can be augmented to present various threat scenarios. It can operate at approximately 30 knots in sea state 1 and in sea state 3 at approximately 12 knots.

QST-35A


Operational Sites	
NAWCWD	Point Mugu, CA
PMRF	Barking Sands, HI
NAWCAD	Patuxent River, MD
NAWCAD Detachment	Norfolk, VA

QST-35B	Operational Sites	
	NAWCWD	Point Mugu, CA
	NAWCAD	Patuxent River, MD

QST-35 Point-of-Contact . . . . . .

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

QST-35A Characteristics . . . . . .

QST-35A:		
Characteristics	Metric	Imperial
Length	17m	56 ft
Beam	4.8m	16 ft
Freeboard	1m	3 ft
Draft	74cm	29 in
Propulsion	4 Mercury Marine: Gasoline V8 (370 pshp each)	
Hull & Deck Construction	Fiberglass Reinforced Plastic (FRP)	
Maximum Speed (Sea State 1)	30 kts	
Control System	SeaCAN	
Control Links	UHF, ITCS, PCCU, SNTC (Norfolk only)	

QST-35B Characteristics . . . . . .

QST-35B:		
Characteristics	Metric	Imperial
Length	17.6m	58 ft
Beam	4.8m	16 ft
Freeboard	1.2m	4 ft
Draft	1m	3 ft
Propulsion	2 MTU Detroit Diesels: Inline 6 (825 pshp each)	
Hull & Deck Construction	Aluminum	
Maximum Speed (Sea State 1)	33 kts	
Control System	The QST-35B is not currently operational in remote control mode, but when converted, will utilize the same systems as the QST-35A.	
Control Links		

QST-35 Capabilities . . . . . .

The QST-35 is remotely controlled for unmanned target operations, using several target control systems either the Integrated Target Control System (ITCS) an Ultra High Frequency (UHF) system, the Portable Command and Control Unit (PCCU), or the System for Naval Target Control (SNTC) (SNTC currently at Norfolk, VA only). UHF can also be used on fixed ranges, but provides no tracking function or telemetry. The QST-35 can also be operated manually by an on-board crew for non-firing operations.

The QST-35 supports tow-target operational requirements with the Improved Surface Tow Target (ISTT) and the Low Cost Tow Target (LCTT). The QST-35 has multiple capabilities beyond what is presented within this Guide. We encourage you to contact the Seaborne Target Team to discuss any upcoming operation in which the QST-35 may be able to support.

QST-35 Augmentation . . . . . .

Target Augmentation Systems (TAS) are devices, which are used within, or on a target to enhance threat realism. Systems change with time depending on weapon systems requirements and usage. New systems evolve and are developed based on Research, Development, Test and Evaluation (RDT&E) and training requirements.

Through the use of various target augmentation systems provided by NAWCWD, the QST-35 can be enhanced to represent numerous surface craft of substantially different sizes. Additionally, through the use of other types of augmentation, the QST-35 can simulate Electronic Countermeasures and radio frequency (RF) emissions, enhance infrared (IR) signatures, and record Miss Distance Information.

The augmentation available for use or under evaluation for use on the QST-35 is listed in this section. For more specific technical data on each of the devices refer to the section of this guide entitled *TAS — Target Augmentation Systems*. The TAS section contains application and usage data for use in determining appropriate augmentation for use on all weapon applications. Please discuss additional requirements with the QST-35 Point of Contact.

- Radar Cross Section Enhancement (RTAS)

  The QST-35 may be augmented with a variety of TAS items to enable it to represent threat platforms of many sizes.

- Active Emitter Simulation (AETAS)

  A variety of active emitters may be installed on the QST-35 to simulate a number of threat functions such as active radar.

- Electronic Countermeasures Simulation (ECMTAS)

  Electronic Countermeasures devices simulate the type of emissions expected from a family of threat vessels.

- Visual Augmentation

  A strobe light or other devices can be used to enhance visual acquisition of this target.

- IR Signature Enhancement/Countermeasure Simulation (IR/IRCMTAS)

  The QST-35 can be outfitted with heaters or other apparatus to provide a threat-representative infrared signature profile.

  Infrared countermeasures systems are also available for use aboard the QST-35.

- Miss Distance Information (STAS)

  A number of miss distance (scoring) systems are available to assess how close a weapon came to this target.

High-Speed Maneuvering Surface Target
HSMST

HSMST Description . . . . . .

The HSMST provides the user with a medium to high speed surface target with a high degree of maneuverability via remote control. At 8 meters (26.3 feet) in length, the HSMST is capable of speeds up to 46 knots. The HSMST can be augmented to present various threat scenarios.

HSMST	Operating Sites	
	**NAWCWD**	**Point Mugu, CA**
	PMRF	**Barking Sands, HI**
	NAWCAD	**Patuxent River, MD**
	NAWCAD Detachment	**Norfolk, VA**
	SCORE	**San Diego, CA**
	CFAO	**Okinawa, Japan**
	MCAS	**Cherry Point, NC**

HSMST Point-of-Contact. . . . . .

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

HSMST Characteristics . . . . . .

HSMST Characteristics	
Length	8m / 26ft
Weight	Dry - 4,800 lb Wet – 5,700 lb
Propulsion	2x200hp outboard engines
Hull Construction	Hull - Aluminum deep vee Sponsons - filled with closed-cell foam
Maximum Speed (Sea State 1)	46kt top speed
Control System	SeaCAN
Control Links	UHF, ITCS, PCCU, SNTC, BAMS

HSMST Capabilities. . . . . .

The HSMST was designed to be a high-speed target, remotely controlled for unmanned target operations, using several target control systems including the Integrated Target Control System (ITCS) an Ultra High Frequency (UHF) system, the Portable Command and Control Unit (PCCU), or the System for Naval Target Control (SNTC) (SNTC currently at Norfolk, VA only). UHF can also be used on fixed ranges, but provides no tracking function or telemetry. The HSMST can also be operated manually by an on-board crew for non-firing operations. The HSMST supports tow-target operational requirements with the Improved Surface Tow Target (ISTT) and the Low Cost Tow Target (LCTT).

Through the use of various target augmentation systems provided by NAWCWD, the HSMST can be enhanced to represent numerous surface craft of substantially larger sizes. Conversely, the apparent radar cross section can also be reduced to create a more "stealthy" target. If desired, the HSMST can be outfitted with other forms of augmentation to enhance its threat capabilities. Such options include Electronic Countermeasures and radio frequency (RF) emissions, enhanced Radar Cross Section (RCS) and infrared (IR) signatures, and systems to determine Miss Distance Information. For additional information on HSMST capabilities, please contact Seaborne Targets Team.

HSMST Augmentation. . . . . .

Target Augmentation Systems (TAS) are devices, which are used within, or on a target to enhance threat realism. Systems change with time depending on weapon systems requirements and usage. New systems evolve and are developed based on Research, Development, Test and Evaluation (RDT&E) and training requirements.

Augmentation is available for use on the HSMST.

- Radar Cross Section Enhancement (RTAS)
- Active Emitter Simulation (AETAS)
- Electronic Countermeasures Simulation (ECMTAS)

- Visual Augmentation
- IR Signature Enhancement/Countermeasure Simulation (IR/IRCMTAS)
- Miss Distance Information (STAS)

Ship-Deployable Surface Target
SDST

SDST Description. . . .

The Ship Deployable Seaborne Target (SDST) is a high-speed commercial personnel watercraft. It is designed to provide a remotely controlled target, which can be augmented to present various threat scenarios. SDST is unique in that it can be launched from Navy ships as well as any standard boat launch ramp. It can operate in at approximately 40 knots in sea state 1 and in a sea state 2 at approximately 20 knots.

SDST	
	

Operational Sites	
NAWCWD	Point Mugu, CA
NAWCAD	Patuxent River, MD
NAWCAD Det	Norfolk, VA
CFAO	Okinawa, Japan
SCORE	San Diego, CA
ATG, Norfolk	Norfolk, VA
ATG, Mayport	Mayport, FL

SDST Point-of-Contact . . . . . .

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

SDST Characteristics . . . . . .

SDST Characteristics

Dimensions (length*width*height)	130X48X44 inches
Dry Weight	790 lbs
Engine	155HP three cylinder, four stroke Rotax multiport injection
Hull	Fiberglass reinforced plastic
Top Speed	49 Knots
Control System	SeaCAN
Control Links	PCCU, BAMS

SDST Capabilities. . . . . .

The SDST was designed to provide the user with a viable high-speed surface target. It also can support tow target operational requirements with the Low Cost Tow Target (LCTT). When towing the LCTT, the SDST should **NEVER** be operated above 20 knots.

The SDST was designed to support requirements for several weapon systems, including; MK-86 Gun Fire Control System, fleet Surface Gunnery Exercises, Armed Helicopter for aerial gunnery, visual/radar acquisition and others.

The SDST is remotely controlled for unmanned target operations using the Portable Command and Control Unit (PCCU) when being deployed. It can be operated manually for performing maintenance checks and testing of installed systems, but it should not be manned for operations.

The SDST has multiple capabilities beyond what is presented within this Guide. We encourage you to contact Seaborne Targets Team to further discuss any upcoming operation in which the SDST may be able to support. The Surface Targets Team has the capability to design, modify and install various augmentation devices, as practical, to meet specific user requirements aboard the SDST.

SDST Augmentation . . . . . .

Target Augmentation Systems (TAS) are devices, which are used within, or on a target to enhance threat realism. Systems change with time depending on Weapon Systems inventory and usage. New systems evolve and are developed based on Research, Development, Test and Evaluation (RDT&E) and training requirements.

- Radar Cross Section Enhancement (RTAS)

— EchoMax EM 230 Radar Reflector. A cylindrical 3-stack array of laser cut aluminum enclosed in a Polyethylene case, and mast mounted is considered standard radar augmentation for the SDST.

Other forms of augmentation may be adapted to or developed for the SDST. Please contact the Seaborne Target Team to coordinate requests.

Fast-Attack Craft Target
FACT

FACT Description. . . . . .

The Fast Attack Craft Target (FACT) is a multi-purpose high-speed target designed to provide a remotely controlled target, which can be augmented to present various threat scenarios. The FACT can operate at 50+ knots in a sea state 2.

FACT as a target is operational only at NAWCWD, Point Mugu, CA

FACT Point-of-Contact. . . . . .

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

FACT Characteristics . . . . . .

FACT Characteristics	
Length	50 Feet (15.2m)
Propulsion	2each 440 or 480 hp diesel engines Surface drives
Hull Construction	Fiberglass Reinforced Plastic
Maximum Speed (Sea State 2)	50+ kt
Control System	SeaCAN
Control Links	ITCS, PCCU, BAMS

FACT Capabilities. . . . . .

Through the use of various target augmentation systems provided by NAWCWD, the FACT can be enhanced to represent numerous surface craft of substantially larger sizes. Additionally, through the use of other types of augmentation, the FACT can simulate Electronic Countermeasures and radio frequency (RF) emissions, enhance Radar Cross Section (RCS) and infrared (IR) signatures, and record Miss Distance Information.

The FACT is remotely controlled for unmanned target operations, and can be operated manually by an on-board crew for non-firing operations.

This Users' Guide is designed to provide information on the FACT as a platform, listing certain Target Augmentation Systems (TAS) that can be used. The FACT has multiple capabilities beyond what is presented within this Guide. The Surface Targets Team has the capability to design, modify and install various augmentation devices aboard the FACT to meet specific user requirements. Please contact the Seaborne Target Team to discuss any upcoming operations in which the FACT may provide support.

FACT Augmentation. . . . . .

Target Augmentation Systems (TAS) are devices, which are used with, in, or on a target to enhance threat realism. Systems change with time depending on Weapon Systems inventory and usage. New systems evolve and are developed based on weapon systems test and Fleet training requirements. FACT is capable of carrying a variety of augmentation, but no TAS has yet been developed specifically for FACT.

The FACT has multiple capabilities beyond those presented within this Guide. Please contact the Seaborne Team to discuss any upcoming operation.

Mobile Ship Target
MST

MST Description. . . . . .

The Mobile Ship Target (MST) is the Navy's only self-propelled target ship. It is designed with a flat deck to accommodate various physical structures to simulate the superstructure of any number of threat ships. The MST can operate at up to 15 knots and up to sea state 5.

MST is operational only at NAWCWD, Point Mugu, CA

MST Point-of-Contact . . . . . .

Head, Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

MST Characteristics . . . . . .

MST Characteristics	
Length	260 Feet (80m)
Beam	26 Feet (8m)
Propulsion	2each 671 BHP CAT 3412 DITA
Hull Construction	Steel with 7 separate watertight compartments
Max Speed (Sea State 5)	15+ kt
Control System	SeaCAN
Control Links	ITCS, PCCU, BAMS

MST Capabilities. . . . . .

The MST is remotely controlled for unmanned target operations, and can be operated manually by an on-board crew for non-firing operations.

Through the use of various target augmentation systems provided by NAWCWD, the MST can be enhanced to represent numerous surface craft of substantially larger sizes. Additionally, through the use of other types of augmentation, the MST can simulate Electronic Countermeasures and radio frequency (RF) emissions, enhance Radar Cross Section (RCS) and infrared (IR) signatures, and record Miss Distance Information.

This Users' Guide is designed to provide information on the MST as a platform, listing certain Target Augmentation Systems (TAS) that can be used. The MST has multiple capabilities beyond what is presented within this Guide. The Surface Targets Team has the capability to design, modify and install various augmentation devices, as practical, to meet specific user requirements aboard the MST. Please contact the Seaborne Target Team to discuss any upcoming operations in which the MST may provide support.

MST Augmentation. . . . . .

Target Augmentation Systems (TAS) are devices, which are used within, or on a target to enhance threat realism. Systems change with time depending on Weapon Systems inventory and usage. New systems evolve and are developed based on Research, Development, Test and Evaluation (RDT&E) and training requirements. MST can accommodate virtually every form of augmentation.

The MST has multiple capabilities beyond what is presented within this Guide. Please contact the Seaborne Target Team to discuss any upcoming operation in which the MST may provide support.

SURFACE TARGETS TEAM

Improved Surface Tow Target (ISTT)

Improved Surface Tow Target (ISTT)

Description . . . . . .

ISTT was developed by the Surface Targets Team in response to documented Fleet requirements for a wide variety of gunnery operations plus Hellfire.

ISTT	Operational Sites	
	NAWCWD	Point Mugu, CA
	NAWCAD	Patuxent River, MD
	NAWCAD Det	Norfolk, VA
	CFAO	Okinawa, Japan
	PMRF	Kauai, HI
	SCORE	San Diego, CA

ISTT Point-of-Contact . . . . . .

For information regarding the ISTT, please contact:

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

ISTT Characteristics . . . . . .

ISTT:	
Length	**28 ft**
Beam	**8 ft**
Hull & Deck Construction	**Fiberglass Reinforced Plastic (FRP)**
Maximum Speed (Sea State 1)	**25 kts**

ISTT Capabilities. . . . . .

ISTT was originally designed to be towed behind the QST-35. As the HSMST has evolved with greater propulsion, the ISTT can now be reliably towed behind newer models of the HSMST.

ISTT Augmentation . . . . . .

Target Augmentation Systems (TAS) are devices, which are used within, or on a target to enhance threat realism. Systems change with time depending on weapon systems requirements and usage. New systems evolve and are developed based on weapon systems test and training requirements. The augmentation available for use on the ISTT is depicted below. For more specific technical data on each of the devices or availability of additional systems, please contact the Seaborne Target Team.

- Radar Cross Section Enhancement (RTAS)
- Active Emitter Simulation (AETAS)
- Electronic Countermeasures Simulation (ECMTAS)
- Visual Augmentation
- IR Signature Enhancement/Countermeasure Simulation (IR/IRCMTAS)
- Miss Distance Information (MDI)

SURFACE TARGETS TEAM

Low-Cost Tow Target (LCTT)

Low-Cost Tow Target (LCTT) Description . . . . . .

LCTT was developed by the Surface Targets Team in response to documented Fleet requirements for a wide variety of gunnery operations plus Hellfire.

LCTT


Operational Sites	
NAWCWD	Point Mugu, CA
NAWCAD	Patuxent River, MD
NAWCAD Det	Norfolk, VA
CFAO	Okinawa, Japan
PMRF	Kauai, HI
SCORE	San Diego, CA
MCAS	Cherry Point, NC
ATGL	Norfolk, VA
ATGM	Mayport, FL

LCTT Point-of-Contact . . . . . .

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2701 — Voice
(805) 982-2354 — FAX
DSN 551

LCTT Characteristics . . . . . .

LCTT

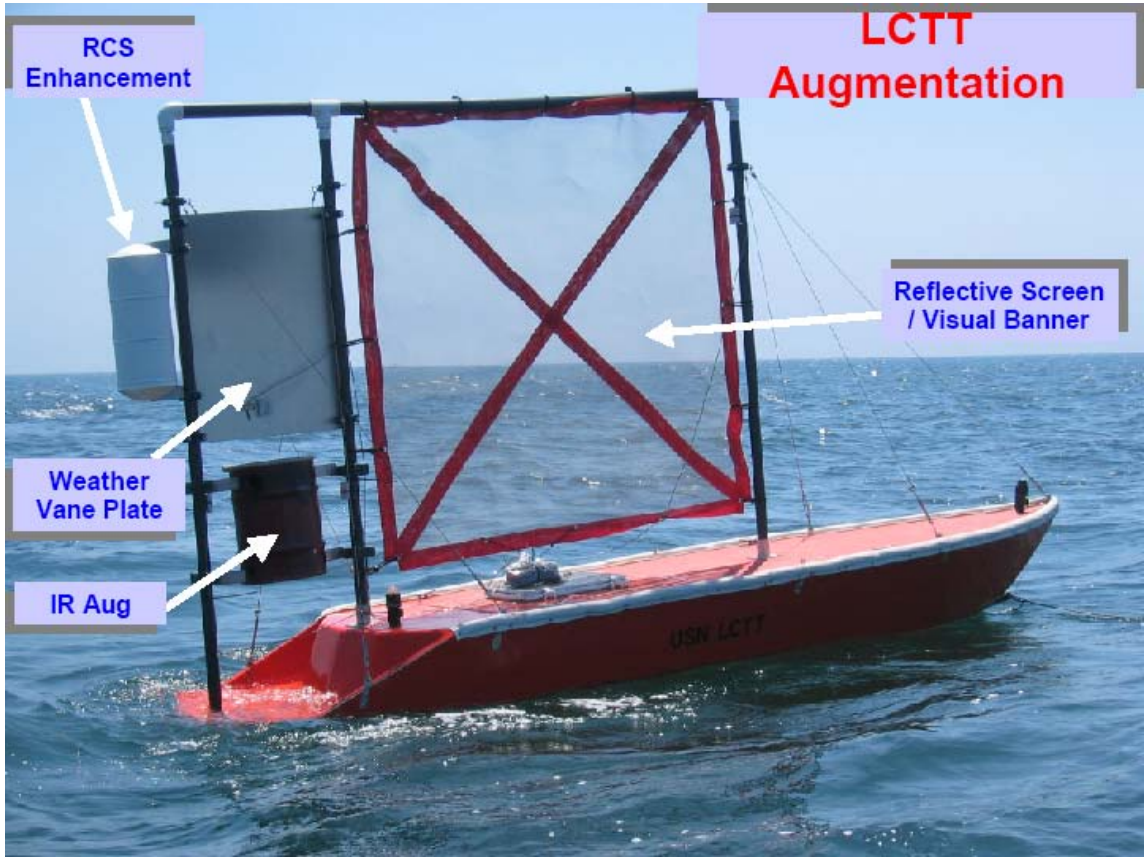
Length	**16 ft**
Beam	**4 ft**
Hull & Deck Construction	**Fiberglass Reinforced Plastic (FRP)**
Maximum Speed (Sea State 1)	**45 kts**

LCTT Capabilities. . . . . .

LCTT is designed to be towed behind any of the powered Surface Targets, but is intended primarily for use with the HSMST and the SDST.

LCTT Augmentation . . . . . .

Target Augmentation Systems (TAS) are devices, which are used within, or on a target to enhance threat realism. Systems change with time depending on weapon systems requirements and usage. New systems evolve and are developed based on weapon systems test and training requirements. The augmentation available for use on the LCTT is depicted below. For more specific technical data on each of the devices or availability of additional systems, please contact the Seaborne Targets Team.



SURFACE TARGETS TEAM

Low-Cost Modular Target (LCMT)

Low-Cost Modular Target (LCMT) Description . . . . . .

LCMT was developed by the Surface Targets Team in response to documented Fleet requirements for a wide variety of operations. LCMT is a modular target constructed from replaceable pontoons and trusses. The LCMT can be configured with a number of mission kits to allow it to support gunnery missions, Hellfire missions, and HARM operations. Therefore, the LCMT functionally replaces the Williams Sled, the ISTT, and the HARM Barge. The HSMST is envisioned as the normal tow vessel for LCMT.

LCMT

Operational Sites	
NAWCWD	Point Mugu, CA
ATMO Det	Norfolk, VA
CFAO	Okinawa, Japan
PMRF	Kauai, HI
SCORE	San Diego, CA

LCMT Point-of-Contact . . . . . .

Surface Targets Team
Threat/Target Systems Department
NAWCWD Point Mugu, CA
(805) 982-2155 — Voice
(805) 982-2354 — FAX
DSN 551

LCMT Characteristics . . . . . .

LCMT Mission Configurations			
Mission	**Hellfire**	**Gunnery**	**HARM**
MODULAR TARGET			
HULL TYPE	PONTOONS		
HULL MATERIAL	PLASTIC		
L X W	25' X 12'		
WEIGHT, Lbs	2700		
PAYLOAD capacity, Lbs	Up to 3000		
TOW SPEED UP TO, Kts	25-30		
TOW VESSEL	HSMST		

LCMT Capabilities. . . . . .

LCMT is designed to be towed behind any of the powered Surface Targets, but is intended primarily for use with the HSMST at speeds up to 30 knots or whatever speed the prevailing seas will allow the tow vessel to achieve. LCMT supports numerous mission scenarios.

LCMT Augmentation . . . . . .

Target Augmentation Systems (TAS) are devices, which are used on a target to enhance threat realism as required by individual weapons systems. Systems change with time depending on weapon systems requirements and usage. New TAS evolves and is developed based on weapon systems test and training requirements. The mission kits available for use on the LCMT are depicted below. For more specific technical data on each of the devices or availability of additional systems, please contact the LCMT POC.

Gunnery Configuration

Hellfire Configuration

HARM Configuration

The **Gunnery Mission Kit** includes fore and aft radar augmentation atop a metal screen which records hits.

The **Hellfire Mission Kit** has a laser reflective screen plus fore and aft infrared augmentation. When targeted on the screen, Hellfire will normally penetrate the screen and will detonate beyond the target, making it useable for multiple firing events on a single mission.

The **HARM Mission Kit** features a HARM emitter powered by on-board batteries. This kit may also utilize a remote on-off command to support changes to operational schedules. The antenna is mounted atop the mast to enable target survivability and the ability to support multiple weapons on a single mission event.

In addition to the configurations shown, NAWCWD is developing a mission kit to accommodate Fleet Harpoon firings.

US Navy Seaborne Targets
TOW TARGET MATRIX

CHARACTERISTICS	LCTT	ISTT	Williams SLED	HARM BARGE
				
HULL TYPE	MONO	MONO	PONTOONS	PONTOONS
HULL MATERIAL	FIBERGLASS	FIBERGLASS	STEEL	STEEL
L X W	16' X 4'	28' X 8'	30' X 14'	45' X 20'
WEIGHT, Lbs	750	2,500	4,200	37,000
PAYLOAD, Lbs	150	400	300	3,000
TOW SPEED UP TO, Kts	45	25	6-8	6-8
MAST/SCREEN/A-FRAME HEIGHT, Ft	6.5	12	12-15	25
TOW VESSEL	A,B,C,D,E	A,B,C	A,B	A,B
WEAPON	B,D,E	D,E,F,G	C	A,B,C,D,E,F,G
TAS	C,E	B,C	D	A,B

TOW VESSEL	
A	TUG
B	SUPPORT VESSEL
C	QST-35
D	HSMST
E	JET SKI

WEAPON	
A	HARM
B	HELLFIRE
C	GUN 5"
D	50 CAL
E	AIR TO SURF GUN
F	ROCKETS
G	IR MAVERICK

TAS	
A	HARM + 20' MAST
B	28' MAST + REFLECTOR
C	IR KIT
D	A FRAME
E	SCREEN BANNER

U. S. Navy Seaborne Target Operating Activities

Operating Activity	Powered						Towed / Static			
	MST	QST-35	FACT	HSMST	SDST	ATLS	HARM Barge	Williams Sled	ISTT	LCTT
NAWCWD, Point Mugu, CA	X	X	X	X	X	X	X	X	X	X
NAWCAD, Pax River, MD		X		X	X		X			
NAWCAD Det, Norfolk, VA		X		X					X	X
CFAO, Okinawa				X	X					X
PMRF, Kauai, HI		X		X					X	
SCORE, San Diego, CA				X						X
MCAS, Cherry Point, NC				X						X
ATGL, Norfolk. VA					X					X
ATGM, Mayport, FL					X					